CFDA10 Series

DC/DC CONVERTER

FEATURES:

- Ultra-wide 4:1 input voltage range
- High effic iency up to 88%
- No-load power consumption aslow as 0.12W
- I/O isolation tes tvoltage 1500VDC
- Input under-voltage protec tion,output short circuit,over-current,over-voltage protec tion
- Operating ambient temperature range:-40℃to+70℃
- Meets CISPR32/EN55032 CLASS A,without extra components
- IEC60950,UL60950,EN62368 approved
  Industry standard pin-out
- 3 Yeare Warranty

10W isolated DC-DC conver terin DIP package
Ultra-wide input and regulated dual/single output

RoHS

Selection Guide

Certification	Part No.①	Input Voltage(VDC)		Output		Full Load Efficiency④(%) Min./Typ.	Max. Capa citive Load⑤(μF)
		Nominal② (Range)	Max.③	Voltage (VDC)	Current(mA) Max./Min.		
CE	*CFDA10-24D05	24 (9-36)	40	±5	±1000/0	81/83	1000
	CFDA10-24D09			±9	±555/0	84/86	680
	*CFDA10-24D12			±12	±416/0	85/87	470
	CFDA10-24D15			±15	±333/0	85/87	330
	*CFDA10-24D24			±24	±208/0	85/87	100
	CFDA10-24S03			3.3	2400/0	76/78	2200
	CFDA10-24S05			5	2000/0	81/83	2200
	CFDA10-24S09			9	1111/0	83/85	680
	CFDA10-24S12			12	833/0	84/86	470
	CFDA10-24S15			15	667/0	84/86	330
	CFDA10-24S24			24	416/0	86/88	100
	*CFDA10-48D05	48 (18-75)	80	±5	±1000/0	81/83	1000
	*CFDA10-48D12			±12	±416/0	85/87	470
	*CFDA10-48D15			±15	±333/0	85/87	330
	*CFDA10-48D24			±24	±208/0	85/87	100
	*CFDA10-48S03			3.3	2400/0	77/79	2200
	*CFDA10-48S05			5	2000/0	81/83	2200
	*CFDA10-48S12			12	833/0	85/87	470
	*CFDA10-48S15			15	667/0	85/87	330
	*CFDA10-48S24			24	416/0	86/88	100

Notes:

① Use“Z2” suffix for chassismounting and “Z4”suffix for DIN-Rail mounting;
② The Z2 and Z4 Model’sstart-up and minimum input voltages are inc reased by 1VDC due to the input reverse polarity protection circuit;
③ Exceeding the maximum input voltage may cause permanent damage;
④ Efficiency ismeasured at nominal input voltage and rated output load; effic ienc ies for Z2 and Z4 Model’s is decreased by 2%due to the input reverse polarity protec tion circuit;
⑤ The specified maximum capac itive load value for positive and negative output is identical;
⑥ Produc tsmarked with“*”need an input capac itor in order to meet conduc ted specifications of CISPR32/EN55032 CLASSA.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current (full load/no-load)	24VDC nominal input series, nominal input voltage	3.3VDC output	--	423/5	434/12	mA
		Others	--	502/5	514/12	
	48VDC nominal input series, nominal input voltage	3.3VDC output	--	190/4	215/8	
		Others	--	251/4	258/8	
Reflec ted Ripple Current	24VDC nominal input series,nominal input voltage		--	40	--	
	48VDC nominal input series,nominal input voltage		--	30	--	
Surge Voltage(1sec. max.)	24VDC nominal input series		-0.7	--	50	VDC
	48VDC nominal input series		-0.7	--	100	
Start-up Voltage	24VDC nominal input series		--	--	9	
	48VDC nominal input series		--	--	18	
Input Under-voltage Protection	24VDC nominal input series		5.5	6.5	--	VDC
	48VDC nominal input series		12	15.5	--	
Start-up Time	Nominal input voltage/constant resistance load		--	10	--	ms
Input Filter			Pi filter			
Hot Plug			Unavailable			
Cnt*	Module on		Cnt pin open or pulled high(3.5-12VDC)			
	Module off		Cnt pin pulled low to -Vin(0-1.2VDC)			
	Input current when off		--	6	10	mA

Note:*The Cnt pin voltage is referenced to input -Vin

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy ①	0%-100%load		--	±1	±3	%
Linear Regulation	Input voltage variation from low to high at full load	Vo1	--	±0.2	±0.5	
		Vo2	--	±0.5	±1	
Load Regulation②	5%-100%load	Vo1	--	±0.5	±1	
		Vo2	--	±0.5	±1.5	
CrossRegulation	Vo1 load at 50%,Vo2 load at range of 10%-100%		--	--	±5	
Transient Recovery Time	25%load step change,nominal input voltage		--	300	500	μs
Transient Response Deviation			--	±3	±5	%
Temperature Coeffic ient	Full load		--	--	±0.03	%/℃
Ripple/Noise③	20MHz bandwidth,5%-100%load		--	40	80	mVp-p
Over-voltage Protection	Input voltage range		110	--	160	%Vo
Over-current Protection			110	140	190	%Io
Short-circuit Protection			Continuous,self-recovery			

Note: ① Output voltage accurac y of ±5VDC/±9VDC output converter for 0%-5%load is ±5%max;
② Load regulation for 0%-100%load is ±5%;
③ Ripple/Noise at≤5%load is 5%Vo Max.The"parallel cable"method is used forRipple and Noise test

General Specification

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output Elec tric Strength Test for 1 minute with a leakage current of 1mA max.	1500	--	--	VDC
InsulationResistance	Input-output resistance at 500VDC	1000	--	--	MΩ
Isolation Capac itance	Input-output capac itance at 100KHz/0.1V	--	1000	--	pF
Operating Temperature	See Fig.1	-40	--	+85	℃
Storage Temperature		-55	--	+125	

Storage Humidity	Non-condensing	5	--	95	%RH
Pin Soldering Resistance Temperature	Soldering spot is1.5mm away from case for 10 seconds	--	--	+300	℃
Vibration		10-150Hz,5G,90min.along X, Y and Z			
Switching Frequency*	PWM mode	--	350	--	KHz
MTBF	MIL-HDBK-217F@25℃	1000	--	--	K hours
Note:*Switching frequenc y ismeasured at full load.The module reduces the switching frequenc y for light load (below 50%) effic ienc y improvement.					

Mechanical Spec ifications

Case Material	Aluminum alloy	
Dimensions	Horizontal package	25.4×25.4×11.7mm
	Z2 chassismounting	76.0×31.5×21.2mm
	Z4 DIN-rail mounting	76.0×31.5×25.8mm
Weight	Horizontal pac kage/Z2 chassismounting/Z4 Din-rail mounting	12.5g/36.0g/56.0g(Typ.)
Cooling method	Free air convection	

Elec tromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS A(Without extra components)/ CLASS B(see Fig.3-② for recommended circuit)	
	RE	CISPR32/EN55032	CLASS A(Without extra components)/ CLASS B(see Fig.3-② for recommended circuit)	
Immunity	ESD	IEC/EN61000-4-2	Contact ±4KV	perf.Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf.Criteria A
	EFT	IEC/EN61000-4-4	±±2KV(see Fig.3-① for recommended c ircuit)	perf.Criteria B
	Surge	IEC/EN61000-4-5	line to line ±2KV(see Fig.3-①for recommended circuit)	perf.Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s	perf.Criteria A
	Voltage dips,short interruptionsand voltage variations immunity	IEC/EN61000-4-29	0%,70%	perf.Criteria B

Typical Characteristic Curves

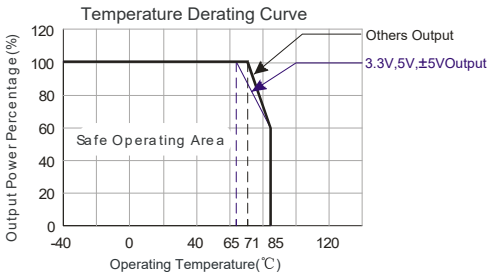
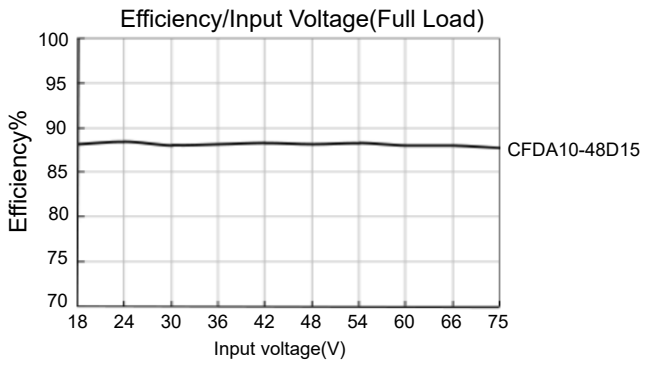
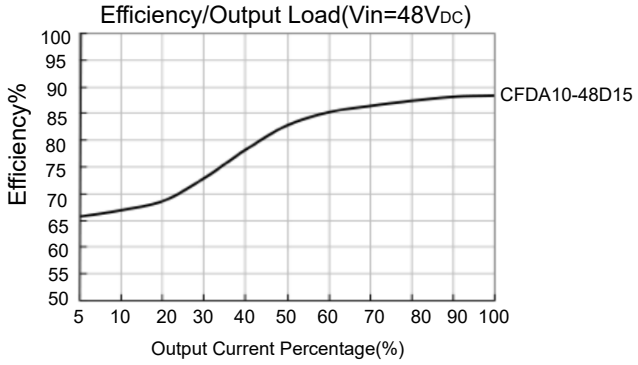
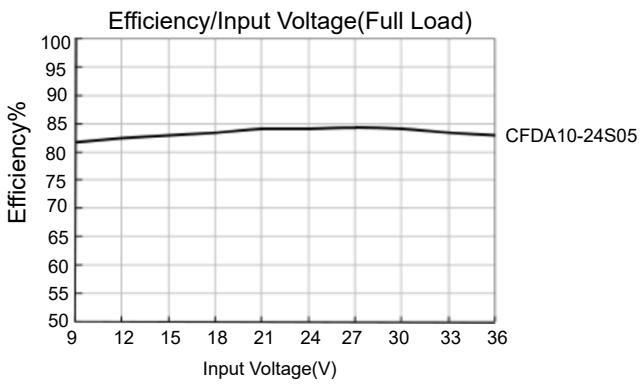
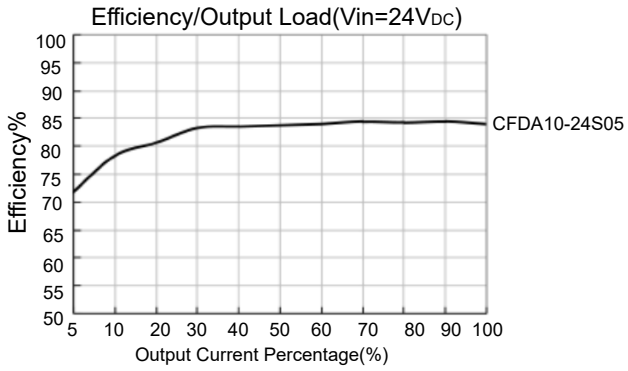


Fig . 1









Design Reference

1.Typical application

All the DC/DC converters of this series are tested before delivery using the recommended c ircuit shown in Fig.2.
Input and/or output ripple can be further reduced by appropriately inc reasing the input & output capac itor valuesCin and Cout and/or by selecting capac itorswith a low ESR(equivalent series resistance). Also make sure that the capac itance is not exceeding the spec ified max. capac itive load value of the product.

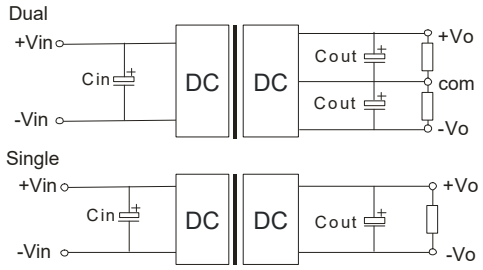


Fig.2

Vin	24VDC	48VDC
Cin	100μF	10μF-47μF
Cout	10μF	

2.EMS compliance circuit

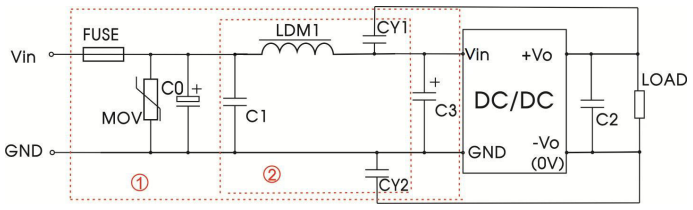


Fig. 3

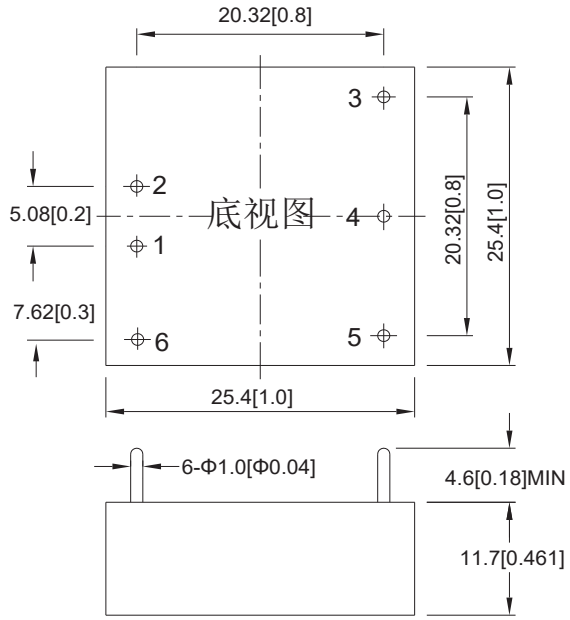
Notes:For EMC testswe use Part①in Fig.3 for immunity and part ② for emissions test.Selecting based on needs.

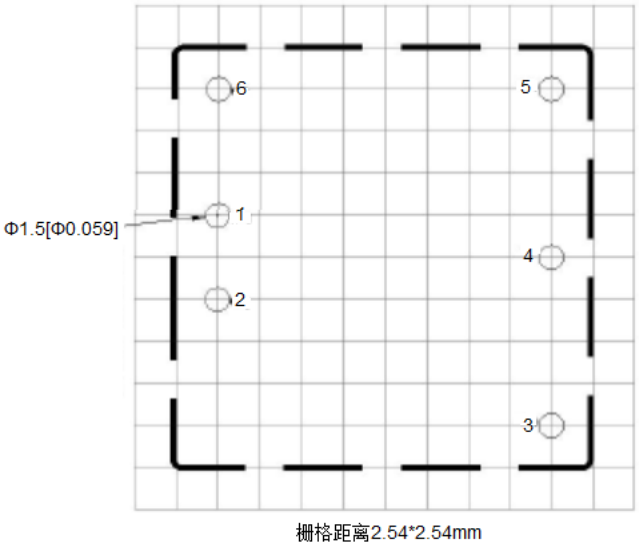
Parameter desc ription:

Model	Vin:24V	Vin:48V
FUSE	Choose ac cording to ac tual input current	
MOV	S20K30	S14K60
C0/C3	330μF/50V	330μF/100V
C1	1μF/50V	1μF/100V
C2	Refer to the Cout in Fig.2	
LDM1	4.7μH	
CY1/CY2	1nF/2KV	

3.The produc ts do not support parallel connec tion of their output

Dimensions Recommended Layout

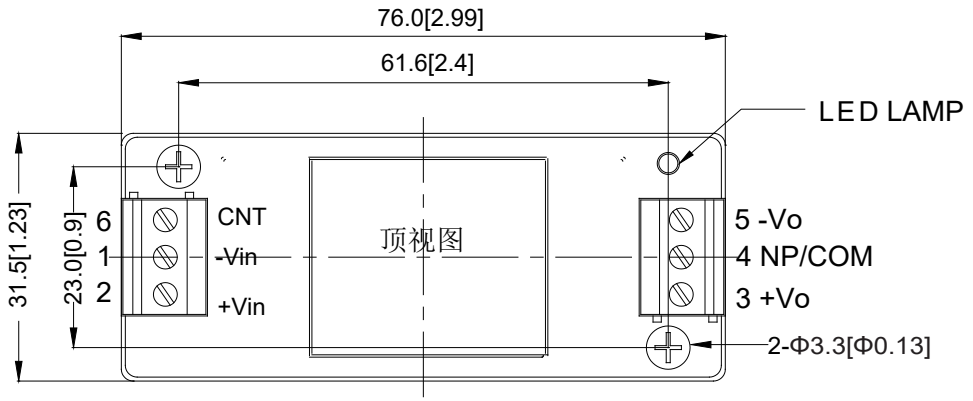


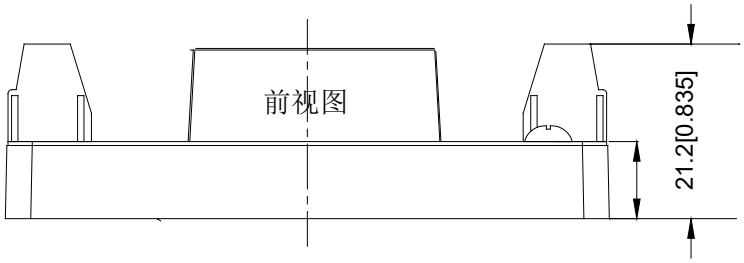


Pin	1	2	3	4	5	6
Single	-Vin	+Vin	+Vo	NP	-Vo	CNT
Dual	-Vin	+Vin	+Vo1	COM	-Vo2	CNT

Unit:mm[inch]

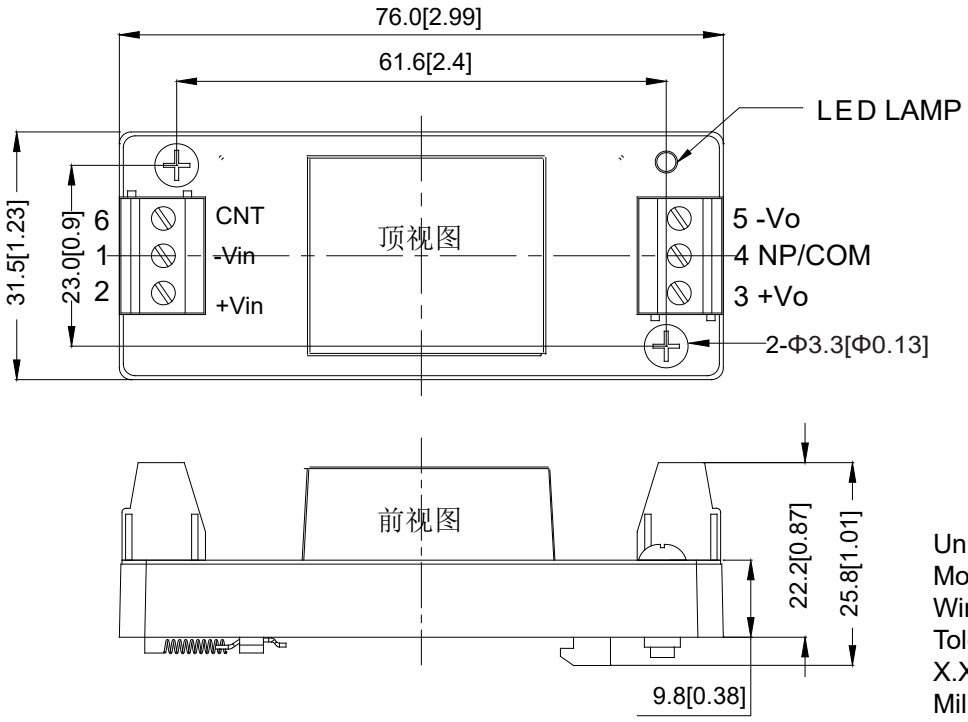
Z2 Dimensions





Unit:mm[Inches]
Mounting rail:TS35
Wire range:24-12 AWG
Tolerances Inches:
X.XX=±0.02,X.XXX=±0.01
Millimeters:X.X=±0.5,X.XX=±0.25
General tolerances:Max 0.4N·m

Z4 Dimensions



Unit:mm[Inches]
Mounting rail:TS35
Wire range:24-12 AWG
Tolerances Inches:
X.XX=±0.02,X.XXX=±0.01
Millimeters:X.X=±0.5,X.XX=±0.25
General tolerances:Max 0.4N·m

1.The recommended unbalance degree of the dual output module load is ≤±5%; if the degree exceeds ±5%, than the product performance cannot be guaranteed to comply with all parameters in the datasheet. Please contact our technicians directly for specific information;
2. The maximum capacitive load offered were tested at nominal input voltage and full load;
3. Unless otherwise specified,parameters in this datasheet were measured under the conditions of Ta=25℃,humidity<75% with nominal input voltage and rated output load;
The maximum capacitive load offered were tested at nominal input voltage and full load;
4.All index testing methods in this datasheet are based on our Company's corporate standards;
5.The performance parameters of the product models listed in this manual are as above, but some parameters of non-standard model products may exceed the requirements mentioned above.Please contact our technicians directly for specific information;
6.Specifications are subject to change without prior notice.

CHEWINS Beijng Science & Technology Co., Ltd.
Address:No.25,torch South Street, Zhuozhou Development Zone,Hebei Province,people's Republic of China
Tel:86-10-68817997 Mobile phone:15901068673 E-mail:sales@chewins.net www.chewins.net